

Circles - Equations and Graphs

<p>1. A(-5 , -4) C(-23 , -12)</p> <p>center=(-14 , -8) circumference=$2\pi\sqrt{97}$ area=97π</p>	<p>2. A(9 , 5) C(-1 , 10)</p> <p>center=(4 , $7\frac{1}{2}$) circumference=$5\pi\sqrt{5}$ area=$31\frac{1}{4}\pi$</p>
<p>3. A(-12 , -1) C(-23 , -11)</p> <p>center=$(-17\frac{1}{2} , -6)$ circumference=$\pi\sqrt{221}$ area=$55\frac{1}{4}\pi$</p>	<p>4. A(12 , 6) C(7 , 8)</p> <p>center=$(9\frac{1}{2} , 7)$ circumference=$\pi\sqrt{29}$ area=$7\frac{1}{4}\pi$</p>
<p>5. A(-4 , -11) C(10 , -23)</p> <p>center=(3 , -17) circumference=$2\pi\sqrt{85}$ area=85π</p>	<p>6. A(2 , -12) C(6 , -18)</p> <p>center=(4 , -15) circumference=$2\pi\sqrt{13}$ area=13π</p>
<p>7. A(2 , -11) C(-16 , -21)</p> <p>$\frac{2+(-16)}{2} = -7, \frac{-11+(-21)}{2} = -16$</p> <p>center=(-7 , -16) circumference=$2\pi\sqrt{106}$ area=106π</p> <p>$d = \sqrt{(2-(-7))^2 + (-11-(-16))^2}$ $= \sqrt{9^2 + 5^2} = \sqrt{106} = r$</p>	<p>8. A(4 , -9) C(-7 , 9)</p> <p>center=$(-1\frac{1}{2} , 0)$ circumference=$\pi\sqrt{445}$ area=$111\frac{1}{4}\pi$</p>

<p>9. A(9 , 12) C(-9 , 14)</p> <p>center=(0 , 13) circumference=$2\pi \sqrt{82}$ area=82π</p>	<p>10. A(-12 , -6) C(-23 , -8)</p> <p>center=$(-17\frac{1}{2} , -7)$ circumference=$5\pi \sqrt{5}$ area=$31\frac{1}{4}\pi$</p> <p>$\sqrt{31.25} = \sqrt{\frac{125}{4}}$ $\frac{\sqrt{125}}{2} = \frac{5\sqrt{5}}{2}$ $\sqrt{125} = 5\sqrt{5}$ 5 25 5 5</p>
<p>11. A(-12 , -1) C(0 , -3)</p> <p>center=(-6 , -2) circumference=$2\pi \sqrt{37}$ area=37π</p>	<p>12. A(3 , -12) C(-11 , -3)</p> <p>center=$(-4 , -7\frac{1}{2})$ circumference=$\pi \sqrt{277}$ area=$69\frac{1}{4}\pi$</p>
<p>13. A(-12 , -3) C(6 , -9)</p> <p>center=(-3 , -6) circumference=$6\pi \sqrt{10}$ area=90π</p> <p>$\sqrt{90}$ 9 10 3 3 2 5 $3\sqrt{10}$</p>	<p>14. A(-10 , 8) C(7 , 6)</p> <p>center=$(-1\frac{1}{2} , 7)$ circumference=$\pi \sqrt{293}$ area=$73\frac{1}{4}\pi$</p>
<p>15. A(-2 , -1) C(0 , -14)</p> <p>center=$(-1 , -7\frac{1}{2})$ circumference=$\pi \sqrt{173}$ area=$43\frac{1}{4}\pi$</p>	<p>16. A(9 , -11) C(0 , -7)</p> <p>center=$(4\frac{1}{2} , -9)$ circumference=$\pi \sqrt{97}$ area=$24\frac{1}{4}\pi$</p>

The equation of a circle

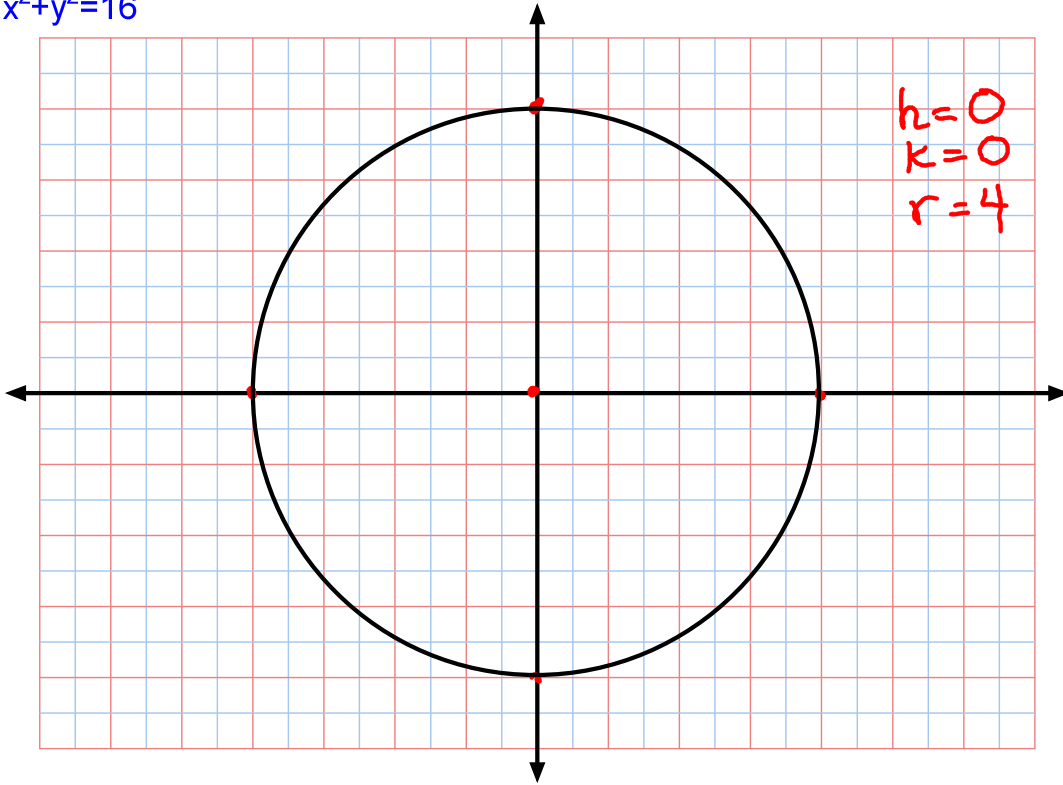
$$(x - h)^2 + (y - k)^2 = r^2$$

(h, k) is the center
r is the radius

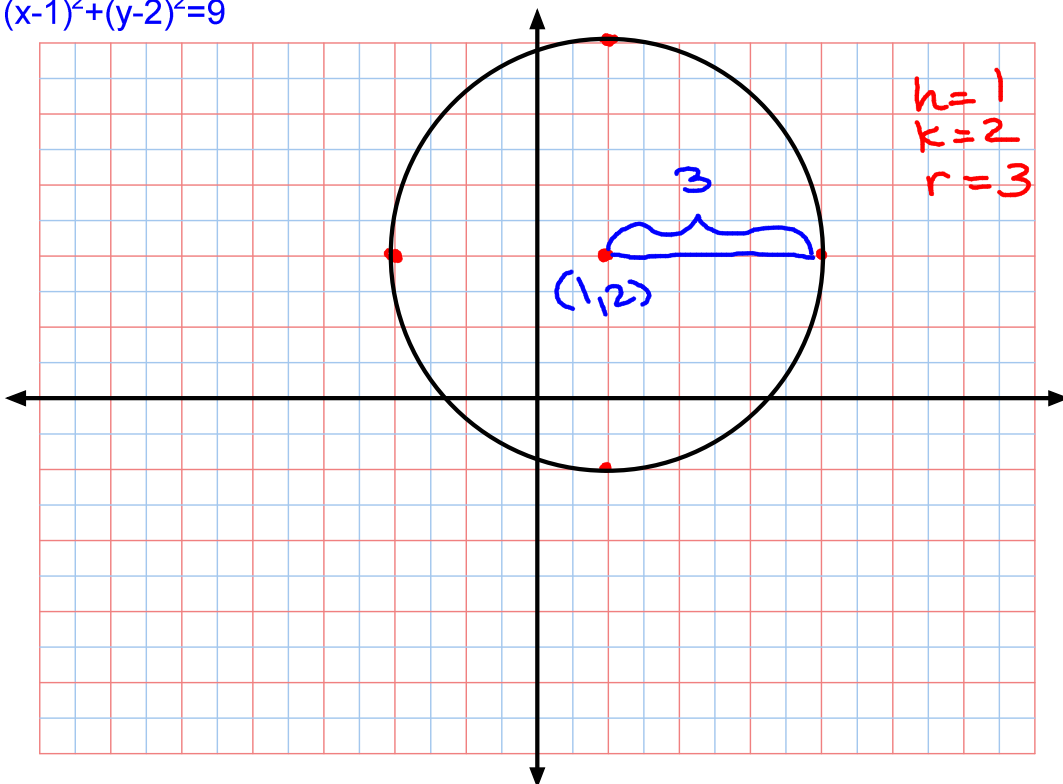
$$(x-2)^2 + (y-1)^2 = 25$$

h=2 k=1 r²=25
r=5

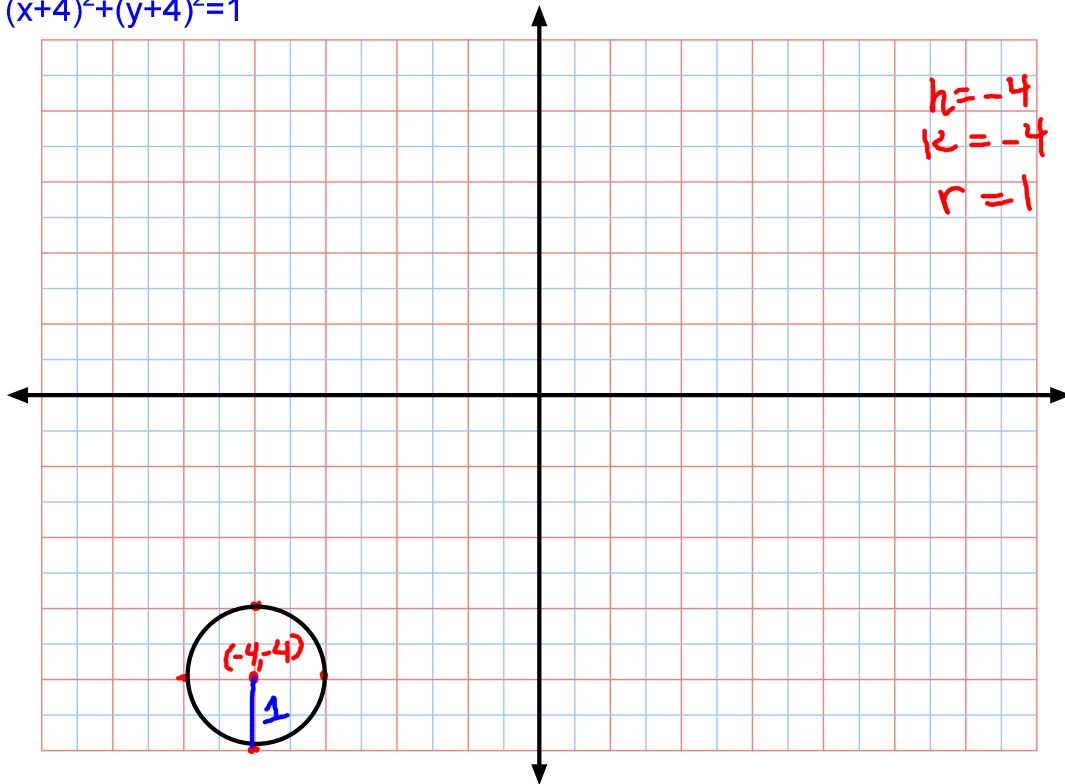
$$x^2 + y^2 = 16$$



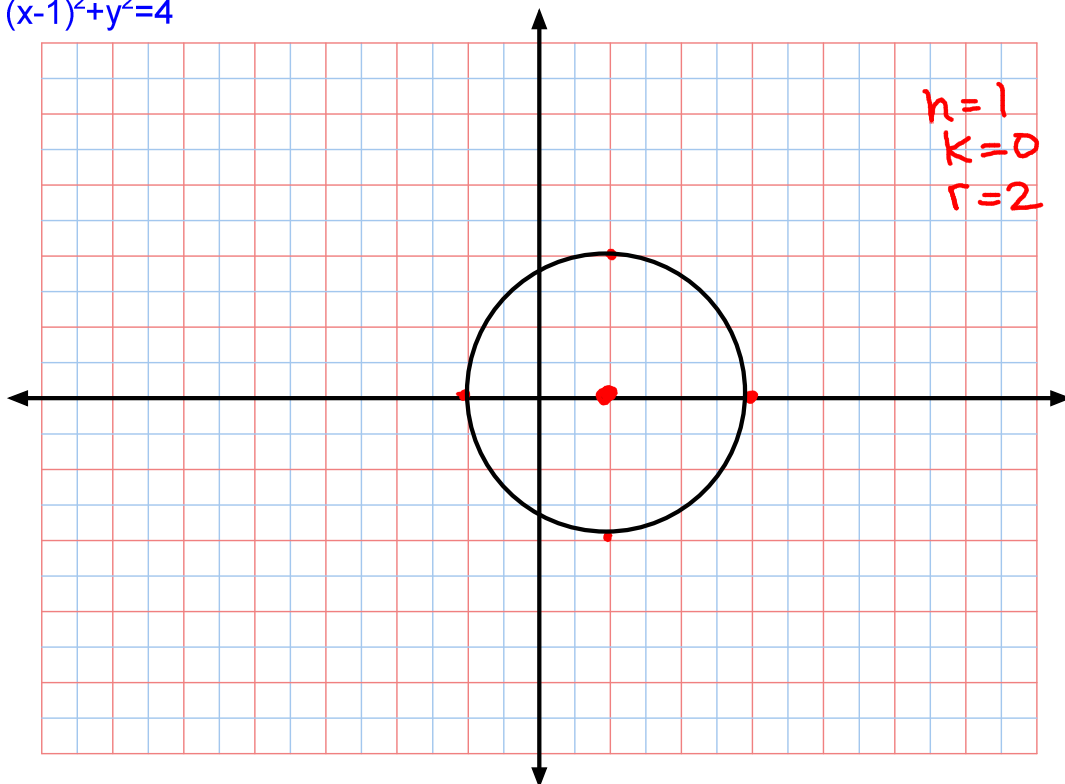
$$(x-1)^2 + (y-2)^2 = 9$$



$$(x+4)^2+(y+4)^2=1$$



$$(x-1)^2+y^2=4$$



What if it is in the wrong form?

Reform the equation so it is in the correct form.

$$x^2 + y^2 + 8x - 2y + 13 = 0$$

$$\boxed{x^2 + 8x} + \boxed{y^2 - 2y} = -13$$

↓ reorder

$$x^2 + ax + y^2 + ay = \text{---}$$

$$x^2 + \boxed{8x} + \boxed{16} + y^2 - 2y + \boxed{1} = -13 + 16 + 1$$

$\div 2 = 4^2$ $\div 2 = 1^2$

$$\boxed{x^2 + 8x + 16} + y^2 - 2y + 1 = -13 + 16 + 1$$

$$(x+4)^2 + (y-1)^2 = 4$$

$$\begin{aligned} h &= -4 \\ k &= 1 \\ r &= 2 \end{aligned}$$

$$x^2 + y^2 - 6x - 2y + 8 = 0$$

-8 -8

$$x^2 - 6x + y^2 - 2y = -8$$

$$\begin{aligned} -6/2 &= -3 \\ -3^2 &= 9 \end{aligned}$$

$$\begin{aligned} -2/2 &= -1 \\ -1^2 &= 1 \end{aligned}$$

$$x^2 - 6x + 9 + y^2 - 2y + 1 = -8 + 9 + 1$$

$$(x-3)^2 + (y-1)^2 = 2$$

$$\begin{aligned} h &= 3 \\ k &= 1 \end{aligned}$$

$$r = \sqrt{2}$$

$$x^2 + \underline{10}x + 25$$

$$(x+5)(x+5)$$

$$= (x+5)^2$$

$$y^2 - \underline{14}x + 49$$

$$(x-7)^2$$

$$10/2 = 5$$

$$5^2 = 25$$

$$-14/2 = -7$$

$$-7^2 = 49$$